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Table of Content

The MACICT Policy and procedures for Quality Assurance: Goals of This Guideline **Błąd! Nie zdefiniowano zakłádki.**

1.1. Summary list of the MACICT standards for Quality Assurance according to European standards **Błąd! Nie zdefiniowano zakłádki.**

1.2 Approval, monitoring and periodic review of programmes and awards: Overview **Błąd! Nie zdefiniowano zakłádki.**

1.3 Assessment of students **Błąd! Nie zdefiniowano zakłádki.**

1.4 Quality assurance of teaching staff **Błąd! Nie zdefiniowano zakłádki.**

1.5 Learning resources and student support **Błąd! Nie zdefiniowano zakłádki.**

1.6 Information systems **Błąd! Nie zdefiniowano zakłádki.**

1.7 Public information **Błąd! Nie zdefiniowano zakłádki.**

2.2 Development of external quality **Błąd! Nie zdefiniowano zakłádki.**

2.3 Criteria for decisions **Błąd! Nie zdefiniowano zakłádki.**

2.4 Processes fit for purpose **Błąd! Nie zdefiniowano zakłádki.**

2.5 Reporting **Błąd! Nie zdefiniowano zakłádki.**

2.6 Follow-up procedures **Błąd! Nie zdefiniowano zakłádki.**

2.7 Periodic reviews **Błąd! Nie zdefiniowano zakłádki.**

2.8 System-wide analyses **Błąd! Nie zdefiniowano zakłádki.**

Eight principles of effective teaching **Błąd! Nie zdefiniowano zakłádki.**

Set of principles **Błąd! Nie zdefiniowano zakłádki.**

Eight ideas **Błąd! Nie zdefiniowano zakłádki.**

Effective teaching **Błąd! Nie zdefiniowano zakłádki.**

1. Develop mastery learning **Błąd! Nie zdefiniowano zakłádki.**

2. Don't dismiss knowledge as 'lower order' **Błąd! Nie zdefiniowano zakłádki.**

3. Expect excellence from all **Błąd! Nie zdefiniowano zakłádki.**

4.1 Guide learning **Błąd! Nie zdefiniowano zakłádki.**

4.2. Worked examples over problem solving tasks **Błąd! Nie zdefiniowano zakłádki.**

5. Ensure that students have to think hard **Błąd! Nie zdefiniowano zakłádki.**

6.1 Put deliberate practice into lessons	Błąd! Nie zdefiniowano zakłádki.
6.2 QA Team recommendation according to Rosenshine (2012)	Błąd! Nie zdefiniowano zakłádki.
7. Test to improve learning	Błąd! Nie zdefiniowano zakłádki.
8. Use questioning frequently and rigorously	Błąd! Nie zdefiniowano zakłádki.
Various effective teaching methods	Błąd! Nie zdefiniowano zakłádki.
Course evaluation scheme according to this rules	Błąd! Nie zdefiniowano zakłádki.
Examples of evaluation questionnaires.	Błąd! Nie zdefiniowano zakłádki.
Proposition of course evaluation by students	Błąd! Nie zdefiniowano zakłádki.
Proposition of course evaluation by teachers	Błąd! Nie zdefiniowano zakłádki.
Good Assessment Practices	Błąd! Nie zdefiniowano zakłádki.
Sample syllabus review patterns	Błąd! Nie zdefiniowano zakłádki.
Credit ECTS points:	Błąd! Nie zdefiniowano zakłádki.
Goals and tasks of the course	Błąd! Nie zdefiniowano zakłádki.
Theoretical and practical knowledge	Błąd! Nie zdefiniowano zakłádki.
Document References	Błąd! Nie zdefiniowano zakłádki.

Document Purpose

This guidance was elaborated by the Quality Assurance Team of MACICT Project on the basis of requirements of the Bologna Process and Standards and Guidelines for Quality Assurance in the European Higher Education Area, and Guide For Experts On Quality Assessment of Project Proposals In Erasmus+ Actions.

The goals of this document is also to help to learn the BY partners

- what are the principles, and methods in conducting teaching among MACICT project,
- which procedures of QA work in the EU partner universities should be employed,
- how pedagogical approaches & methods of teaching/learning are measured & evaluated.

The BY partners should make a report (5 BY visitors will make it collectively) on the best practices learnt at the EU partners. They will present the report during an internal dissemination seminar (planned as an activity A.7.2 "Preparing & holding Internal dissemination seminars" in WP7). This will be the result of activity A.5.1 Workshop on QA methods & procedures for BY staff.

The MACICT QA Team also relied on its own scientific research related to the main issues of the project. Thus, the main principles of QA are as follows.

Definition of Terminology (Glossary)

The concept and the implementation plan of the Erasmus+-project "Modernization of Master Curriculum in ICT

for Enhancing Student Employability in Belarus" (MaCICT).

MaCICT is aimed to enhance the employability of ICT master students, foster entrepreneurship and establishment of SMEs in the ICT industry, and to upscale the position of higher education. For this, MaCICT updates the ICT study programs to become more labor market and society oriented, practice-based, and student-centered. This forces universities to combine the traditional professional skills and competencies with soft and transferable skills and to focus more on multidisciplinary studies and internationalization of the study environment. Thus, the goal of the project is to modernize the ICT master level education at five Belarusian universities. The Belarusian universities are supported by three partner universities from the European Union. The modernization includes the training of lecturers in modern didactic and educational approaches, redesign of some courses as well as the introduction of international student projects into education.

The main reasons for the project are the steadily growing importance of ICT for the economic growth in Belarus and that the existing master study programs do not prepare the students according to the market's demands. Thus, this project aims to eliminate the main shortcomings of graduates in respect of their employability such as: (1) lack of team-building skills, (2) lack of entrepreneurial skills, (3) low communication and socialization skills, (4) lack of knowledge in the fields of management and business (Mäkiö et al. 2019).

The MACICT Policy and procedures for Quality Assurance: Goals of This Guideline

This guidance was elaborated by the Quality Assurance Team of MACICT Project on the basis of requirements of the Bologna Process and Standards and Guidelines for Quality Assurance in the European Higher Education Area, and Guide For Experts On Quality Assessment Of Project Proposals In Erasmus+ Actions. The MACICT QA Team also relied on its own scientific research related to the main issues of the project. Thus, the main principles of QA are as follows.

- Partners should follow the project's common guidelines resulting from the general principles assumed in the European Union, and in particular from the ERASMUS + program.
- Thus, all Institutions that are Partners of the MACICT Project assume a policy and associated procedures for the assurance of the quality and standards of their programs and awards.
- However, in all these activities, the organizational culture and national traditions of a given institution should be taken into account, resulting from the assumptions of the ministry of science and higher education in a given country.
- All Partners should also be clearly committed to developing a culture that recognizes the importance of quality and quality assurance in their work.
- To achieve these goals , Partners should develop and implement a strategy of continuous quality improvement, policies and procedures as well as to the specificity of a given educational unit and the so-called educational program platform.
- The MACICT Partners should also include a role for students and other stakeholders.
- The MACICT Partners should have a policy and associated procedures for the assurance of the quality and standards of their programmes and awards.
- To achieve these goals, institutions should develop and implement a strategy for the continuous enhancement of quality. The strategy, policy and procedures should have a formal status and be publicly available.
- They should also include a role for students and other stakeholders.

1.1. Summary list of the MACICT standards for Quality Assurance according to European standards

This summary list of European standards for Quality Assurance in higher education based on recommendations of European University Association 2020 as well as European reports related to Standards and Guidelines for Quality Assurance in the European Higher Education Area

- The standards are in three parts including:
- Internal Quality Assurance of higher education institutions, having in mind BY PARTNERS
- External Quality Assurance of higher education, and
- Quality Assurance of external quality experts.

1.2 Approval, monitoring and periodic review of programmes and awards: Overview

All BY Partners should have

- formal mechanisms for the approval,
- periodic review and
- monitoring of their programmes and awards.

1.3 Assessment of students

Students should be assessed using

- published criteria,
- regulations and,
- procedures,
- which are applied consistently.

1.4 Quality assurance of teaching staff

All BY Partners should have ways to:

- properly manage the teaching process in the project and to gather appropriate human resources and teaching equipment,
- staff involved in teaching students should be qualified and competent in relation to the project objectives,
- persons responsible for the implementation of the project in individual project institutions should properly plan activities, organize, motivate the teaching staff and students, and also control,
- internal reports should be available to those carrying out external reviews,
- as well as comments commented on in reports.

1.5 Learning resources and student support

Institutions implementing the project should ensure:

- adequate material resources in the form of classrooms, equipment,
- appropriate apprenticeships in the context of the project,
- teaching resources (human factor),
- student learning support, suitable for each program and course offered.

1.6 Information systems

Project implementing institutions should ensure this

- collecting
- analysing
- use

with relevant information for the effective management of study programs and other project-related activities.

1.7 Public information

Institutions implementing our project should:

- publish objective information on a regular basis
- as fresh and up-to-date as possible, both quantitative and qualitative,
- about the programs and
- the rewards they offer.

2.2 Development of external quality

- The Team for Assessment of the Quality of Assessment together with Partners defines the goals and objectives of quality assurance processes before the actual quality assessment processes of activities and documentation are launched.
- The objectives and tasks of quality assurance processes are developed by all responsible persons (including universities).
- The goals and objectives of design processes should be published along with a description of the procedures used.

2.3 Criteria for decisions

Any formal decisions made as a result of an external quality assurance assessment of the project activities should be based on clearly published criteria that are applied consistently.

2.4 Processes fit for purpose

- All external quality assurance processes should be specially designed.
- The design and implementation of external evaluation should ensure that the project can be implemented to achieve the intended and set goals and tasks.

2.5 Reporting

- Reports should be published and written in a style that is clear and accessible to the intended reader.
- Any decisions, compliments or recommendations contained in reports should be easy for the reader to find.

2.6 Follow-up procedures

Quality assurance processes that

- contain recommendations for action or
- require another action plan,

should have a predetermined follow-up that is implemented consistently.

2.7 Periodic reviews

- Project managers and QAs undertake cyclical activities to carry out an external quality assurance assessment of the institution and / or programs.
- The cycle length and review procedures to be used should be clearly defined and published in advance.

2.8 System-wide analyses

Project managers and the QA team are in contact with external experts, and for quality assurance purposes, they should ask the external experts from time to time to make summaries and reports describing and analyzing the overall findings of their reviews, evaluations, evaluations, etc.

Eight principles of effective teaching

The QA Team in cooperation with BY Partners proposed following eight teaching rules - eight ideas from cognitive psychology that teachers in the MACICT project should think about putting into their teaching.

Set of principles

The QA Team proposes to use methodical principles according to the method of Rosenshine (Sherrington, 2019, Winn and Shenton, 2019). It is a set of useful and practical principles developed and substantiated by Shaun Allison and Andy Tharby. The methodological issues deal with six key issues presented in the present study as a set of instructions, following Rosenshine's (2012) recommendations.

Eight ideas

The QA Team recommends eight ideas derived mainly from cognitive psychology summarized by Ruth Powley (2016) for the Optimus Education Knowledge Center for use in teaching practice.

The QA Team recommends that teachers - BY Partners read the original Ruth Powley article and webinar and analyze the resources to embed it in the course plan, which can greatly expand the memory of students.

Effective teaching

QA Teams by Powley (2016) emphasizes the importance of understanding what is effective teaching. Teachers in the program MACICT found that individuals learn better in their preferred learning style. MACICT partners sought to use multiple effective teaching techniques simultaneously, with an emphasis on practice. These results correlate to Powley (2016).

1. Develop mastery learning

Rosenshine's (2012) research on effective teaching advocates 'mastery learning' which builds

automatic fluency in key concepts. He recommends:

- A. beginning lessons with a 5-8 minute review of previous learning
- B. presenting new material in small steps with student practice after each step (Evertson, Emmer, 1980)
- C. limiting the amount of material students receive at one time – reviewing is as important as new content (Miller, 1956; Laberge & Samuels, 1974; Blewett, 2016)
- D. re-teaching material when necessary,

Finding out more about why students' performance doesn't always mean that they have mastered learning (Bjork, 2019).

2. Don't dismiss knowledge as 'lower order'

- The QA Team suggests that teaching should follow the principle that the most effective teachers have a deep understanding of the subjects they teach.
- QA assumes after Rosenshine that "one of the characteristics of effective teachers is their ability to anticipate student errors."
- Therefore, the QA suggests that teachers improve their professional qualifications and employ teachers in the project who have in-depth knowledge of the subject being taught. In-depth knowledge is essential to successful teaching.
- A broad range of knowledge is one of the key factors influencing academic achievement.
- Deep knowledge is also essential for remembering and thinking. Cognitivists such as Daniel Willingham have found that factual memory learns better than memory without (Willingham, 2014; Dunlosky et al., 2013)

3. Expect excellence from all

According to Allison and Tharby (2015), QA Team suggests that 'all, most, some' learning objectives 'stifle aspirations of what students can achieve.'

Think in terms of expected learning gains:

- What deep understanding or technical proficiency will students gain mastery of?
- What will excellence look like?
- Set a single, challenging objective for all students with appropriate scaffolding.

4.1 Guide learning

QA Team recommends reviewing previous learning, providing model responses for students and progressively introducing new learning (scaffolding) due to Powley (2016), Bjork (2019) and Rosenshine (2012) recommended.

QA Team's experiences in the MACICT project research showed that the most successful teachers spent more than half of the class time lecturing, demonstrating, and asking questions. Our results correlated to Rosenshine's effects of teaching (2012).

The QA Team also recommends guided practice: 'When dealing with novel information, learners should be explicitly shown what to do and how to do it'. This results from cognitive scientists such as Kirschner et al. (2012)

4.2. Worked examples over problem solving tasks

- The QA Team recommends best practices in problem-solving tasks (Rosenshine, 2012).
- The developed examples aid learning by reducing the burden on working memory.
- Realistic practical examples help focus on the underlying relationships between problems.
- The instructing teacher should provide clear and detailed instructions and explanations.
- It is important that the teacher provides proven examples of problems or tasks.
- It is good to give a few different examples.

5. Ensure that students have to think hard

According to Visscher and Coe (2003) methods: "Learning takes place when people have to think hard." Teachers should ask themselves questions like, "Where will students have to think hard in this lesson?"

Desired difficulties that hinder short-term performance result in better long-term learning.

They include:

- different conditions of practice
- separating exercise sessions with breaks to make it possible to forget
- interleaving rather than blocking themes
- using download quizzes to test your retention.

More about the desired difficulties in Coe's paper and presentation (2015).

6.1 Put deliberate practice into lessons

- According to Rosenshine (2012), the so-called Great Teaching recommends taking sufficient time to practice to safely consolidate your skills.
- Practicing new learning should last at least three times.
- This over-learning creates fluid understanding and transfers learning to long-term memory.
- Rosenshine (2012) found that the most effective teachers understood that "the material will be forgotten if there is not enough sample."
- His research also suggested that the optimal success rate in practice was 80%: the students studied but still faced challenges.

6.2 QA Team recommendation of a way of teaching

- The so-called Great Teaching, according to Rosenshine (2012), provides a high level of active practice for all students.
- The teacher should be a guide rather than a lecturer, so the guiding principle here is to guide students.
- This is especially important when, for example, they begin exercise, laboratories or work placement.
- The teacher should prepare students for independent vocational practice.
- It is very effective to monitor students as they begin their independent practice in order to provide feedback and corrections.

7. Test to improve learning

If the long-term memory doesn't change, it's very hard to tell what you've learned. Information should be "skewed/ overloaded" by 20% to optimize retraction.

Dunlosky's et al. (2013) research recommends the following methods.

- Practical testing improves memory recovery and is more effective than retesting or concept mapping.
- This happens if testing is frequent, spaced apart, and with feedback.
- Practicing with intervals makes students think more.
- The practice of so-called interleaving enhances memory retrieval.
- A detailed interview supports learning by combining new information with previous knowledge.
- Self-explanatory helps students understand the processes.

8. The QA Team recommendation to use questioning frequently and rigorously

- The so-called Roswshine's Great Teaching recommends effective questioning that requires all students to process and practice material.
- According to Rosenshine (2012), teachers who only ask nine questions in 40 minutes are the least effective.
- According to Rosenshine (2012), asking a large number of questions to test understanding

Various effective teaching methods

As many researchers point out, various pedagogical approaches can be effective, but their effectiveness can be strengthened by applying the aforementioned 8 principles, the so-called Great Teaching.

Below, the QA Team suggests pedagogical methods that can be effective and support the teaching of future engineers.

1. The perceptual method according to (Kurki - Suonio, 2011), which is based on an intuitive understanding of complex topics, as well as on the possibility of creating conceptual structures through the perception of empirical meanings.
2. A project-oriented method according to Mills, (Mills et al., 2003), which enables course participants to ensure the application of knowledge; independent learning, developing practical engineering skills that allow learning through action; ensuring the acquisition of teamwork skills and experience; providing a realistic work environment (Mills et al., 2003).
3. A problem method that should provide learning participants with learning (Mills et al., 2003), student-centered learning (Ertmer, 2015), skills and experience in teamwork (Mills et al., 2003), reference to theory, models and practice (De Graaf and Kolmos, 2003), providing students with job satisfaction (De Graaf and Kolmos, 2003).
4. Method-oriented to the research process (Healey & Jenkins, 2006) , which is characterized by:
 - Enabling acquisition and development of disciplinary and interdisciplinary knowledge and competencies.
 - Ensuring the ability to ask questions and find solutions using scientific methods.
 - An attitude towards the introduction of key competencies and the research process.
5. The method 'Face-to-face to the problem' (Wood, Wood, & Middleton, 1978) , consisting in the introduction of complex theoretical topics, but also on providing a general vision of the objectives and design tasks, also based on joint discussions in focus groups.
6. So called T-CHAT method (Mäkiö-Marusik, Mäkiö, & Kowal, 2017) which combines in fact all previous approaches (...) and supports developing the following engineering skills: participation and conducting the engineering process; design, development, testing, verification and validation of systems;

interdisciplinary thinking; modeling of ideas, projects; design of control systems; understanding of network information systems, algorithm design; time management and delays; ensuring security as well as knowledge and ability to use communication and sensory technologies.

T-CHAT method assumes the training of the following social competences (Mäkiö-Marusik, Mäkiö, & Kowal, 2017, Jasińska Biliczak, & Kowal 2020; Kowal, & Roztock, 2015a, b): cooperation in a team, communication, technical writing and the ability to self-present, or project present.

T-CHAT method assumes the need to train business competencies related to entrepreneurship and to educate such features as flexibility of managing fast-growing technologies; formulating, defining and solving problems; entrepreneurship in action; knowledge of issues related to economic entrepreneurship; implications of employees' competencies for public policy and socio-economic development.

According to this method, classes should be evaluated by students using the qualitative methods (in-depth interviews, focus groups) and quantitative (original evaluation questionnaire) after one month from the beginning of the course, and at the end of the semester, after the end of the course. The authors set up and implemented the measurement and valuation of knowledge, skills and competences as necessary elements of the educational process (Mäkiö-Marusik, Mäkiö, & Kowal, 2017).

Course evaluation scheme according to this rules

The overall goal of the project is to modernise the existing ICT curriculum in order to: 1) enhance employability of ICT master students and 2) foster entrepreneurship and establishment of SMEs in the ICT sector.

This overall goal will be reached by pursuing the following specific objectives:

1. To modernise the existing curriculum on the MSc study programme in ICT
 - a. by updating the existing professional study courses through incorporating the EU partners' best practices – strategies, pedagogical approaches and methods of education to back up professional knowledge and hard skills demanded by the labour market.
 - b. by incorporating new interdisciplinary courses to equip students with competitive knowledge, soft and transferable skills necessary for entering the labour market, pursuing a successful career at the existing companies or starting their own business.
2. To accredit the programme.
3. To develop and to apply the strategy, guidelines, and principles of QA to enhance the modernised MSc study programme in ICT by attracting master students and the labour market to the evaluation and further enhancement of the MSc.
4. To run the modernised MSc study programme at the pilot stage.
5. To promote EU and Belarusian students' cooperation by conducting real-life problems solving projects by international student groups.
6. To assure the quality of the programme and make necessary improvements at the follow-up stage.

The fulfilment of the first two objectives (1a and 1b) will ask for a change

- in pedagogical attitudes, approaches and methods of education in Belorussian teachers,
- in students' mindsets and their adaptability to society and market, and
- on the labour market where graduates from the modernised interdisciplinary MSc study programme in ICT will get better possibilities of employment.

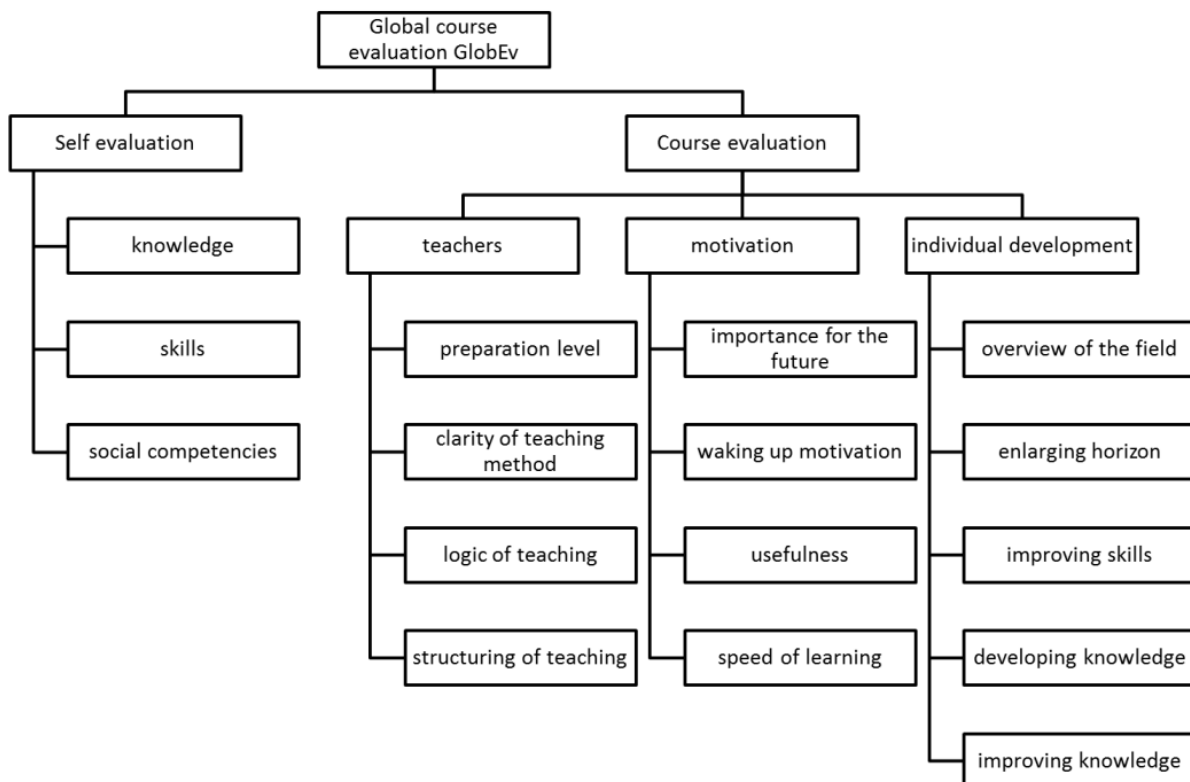
As a further result of the project, some of the graduates will be able to start their own business.

The 3rd and 4th objectives will enhance the quality of the programme and bring it closer to the demands of the labour market and society.

The last three objectives will allow implementation of the modernised MSc study programme and its quality control, improvements and optimization of the programme, and enhance the international dimension of the programme. We assume global evaluation of proposed methods depicted in the scheme presented in Fig. 1, according to Mäkiö-Marusik, Mäkiö, and Kowal, (2017).

The QA team in cooperation with all BY Partners proposed the following course evaluation scheme.

Figure 1. The proposed methods of the course evaluation



A more detailed discussion of the principles for evaluating various aspects of a project will be covered in Section 2 of the QA Guideline.

Examples of suggestions/ recommendations for course evaluation by students and course teachers are presented as Appendixes 1 - 2. We have adopted the principle that BY Partners can either use the solutions suggested by QA Teams, or they can prepare an evaluation consistent with their organizational culture and regulations within their universities.

Examples of evaluation questionnaires are presented as Appendix 1 and Appendix 2.

Good Assessment Practices

On the basis of Erasmus Guide For Experts 2020 we are proposing several good assessment practices for experts and reviewers evaluating BY Partners documents, teaching courses and programs.

For specific activities, experts and reviewers receive detailed advice related to the activity they are working on, during their briefing and during the evaluation period.

Experts and reviewers are recommended to:

- when evaluating reports, programs or syllabuses, read a few conclusions before fully evaluating the first one, as this allows you to compare different aspects of the analysed results
- read the entire document carefully before completing the evaluation form;
- follow the established sequence of reports in relation to project stages;
- pay particular attention to the clarity, consistency and appropriate level of detail in its comments.
- Comments must also be balanced, score-based, objective and polite
- Partners should contact the QA Team immediately if they feel unsure about any of their tasks or encounter difficulties that may hinder their work.

Sample syllabus review patterns are presented in Appendix 3.

The syllabus review form includes:

- University, name of the curriculum
- correlation between the title of the course and the content of the curriculum
- year of study
- learning objectives: including learning outcomes as knowledge, practical skills, social skills
- relation of a specific program in the course description to the number of planned lectures / classes / workshops /
- specification of teaching methods
- literature list
- number of student's own working hours
- methods of verification of the adopted specification of learning outcomes
- the form of filling in individual components of the course specification
- proper definition of ECTS points (one ECTS point corresponds to 25 hours of student's own work)
- a general summary of the reviewer's comments
- list of courses in the program
- how the course correlates with the developed curriculum in relation to the project objectives.

QA Teams has several suggestions on topics as follows:

Teaching formulas:

lecture, exercise, laboratory, language course, seminar, guided self-education, wf, design, e-learning, practice, workshop, seminar - consultation, or other.

The formula should contain information on the number of hours provided for by the given formula, what is the form of crediting the courses, comments on the form of crediting.

The syllabus and formula should take into account the student's own work such as guided self-education, exam preparation, test preparation, presentation, project preparation, etc.

Credit ECTS points:

ECTS points should be awarded in such a way that one credit corresponds to 25-30 hours of student work (attending classes and the student's own work in total), i.e. if the student has 15 hours of classes in the schedule and 45 hours of own work are planned to prepare for classes, the total number of hours is $15 + 45 = 60$ hours, which corresponds to approximately 2 ECTS credits.

Course status

The syllabus should also include the **course status**:

Eg Core course: in the learning standards for a given field of study

Major course: in the learning standards for a given field of study,

Specialization course: proposed by the university as part of a specialization for a given field,

Course of general education: obligatory content listed in the standards in the section OTHER REQUIREMENTS,

Elective course - a course chosen by the student from a group of elective courses.

Prerequisites:

It would be good to enter: the names of the subjects or the content of the education introducing the course or enter "none".

Leading unit: eg Institute of Computer Science

Person (s) conducting the classes: degree, name and surname, telephone number, e-mail

Goals and tasks of the course:

(For example, here are the goals for teaching Mathematical Statistics at the Faculty of Management:

To provide knowledge on various generalizations of the results from a random sample to the general population, with an emphasis on statistical tests and limitations related to their use. Overview of concepts related to test standardization in a narrow and broad sense

Better understanding of methodological issues in own works and a critical reception of other people's works, in which the methods of inductive statistics were used

Awareness of ethical and legal problems and limitations related to conducting qualitative and quantitative research, in particular with the use of inductive statistics methods in science and practice.

Presentation of the possibilities of using inductive statistics methods in social research - in economics and management, presenting theoretical issues in relation to economic practice and management

To provide knowledge about methods, techniques and research tools with the use of inductive statistics)

Assumed learning outcomes in the area (we propose up to 3 outcomes in each field)

Theoretical and practical knowledge

(When describing the effects, QA Team suggests using terms that define the level of the expected student knowledge, e.g.:

Level 1: Defines, calculates, recognizes and names etc.

Level 2: Communicates, discusses, points out differences, etc.

Level 3: Demonstrating, explaining dependencies or relationships etc.

Level 4: Recognizes, searches for important connections and dependencies, analyses, criticizes, etc.,

Level 5: Compares independently, finds relevant connections and dependencies, draws conclusions, etc.

Level 6: Analyses, makes and justifies decisions, independently evaluates and draws conclusions, defends views, etc.)

Skills

(When describing the effects, please use terms describing the expected skills of the student after the end of the course, e.g.: what the student will be able to specifically: prepare; organize; create; assume; perform; draw up; carry out etc.)

Social experiences

(When describing the effects, please use terms that indicate specific social experiences that the student will encounter during the course, with the division of experiences into individual and team experiences:

INDIVIDUAL: e.g.: performs tasks; takes the role of ...; acting ...; is responsible for the implementation of the task (s); evaluates own work; solving a problem; contacts the institution, organization); defines (sets) the date; accepts responsibility for ...; discusses and presents the project; the adopted solution defends;

TEAM: e.g. cooperates with a partner (hand); exchanges opinions (views) in the group; works in a team; manages the work of the team; organizes the work of the team; coordinates the work of the group; sets

tasks and goals for the group; evaluates the work of others; solves problems as a team; manages the project)

Conditions for completing the course: Enter the basic conditions, eg attendance; work that the student must do in the semester; required number of points

Form of passing the course: Enter: eg written test; oral test, written exam; oral exam, term paper, project etc.

Topics, themes and scope: List the topics of the classes and the scope of the issues discussed

Methods of knowledge assimilation:

1. talk: preliminary, presenting new news, fixative
2. discussion: related to the lecture, exercises, multiple, watched – panel, text analysis with discussion
3. lecture: monographic (classic), with a multimedia presentation, problem, conversational, interactive (for small groups)

List of basic references available in:

- university library: Please enter up to 4 items
- library outside the university (indicate the address): Please enter up to 4 items
- Internet (enter the exact link)
- Recommended supplementary literature: Please list up to 6 items

Teaching methods: we suggest that you choose at least one method from all the following, but no more than 2 methods in each group:

Problem methods: method of cases; situational method; brainstorm; project method (research, implementation, practical project);

Show: targeted observation; hospitalization; attendance;

Workshop methods: simulation game (role play); integration games; laboratories (carrying out or designing experiments); problem solving; case study; psychodrama; work in subgroups; projects and tasks carried out individually and as a team; analysis of critical events; mind maps.

Conclusion

The first version of this document was presented during the workshop by 29-30 September 2020 and discussed with BY Partners, the presentation is available at: <http://plan.psychologia.uni.wroc.pl/macict/presentations.html> (as part of A.5.1 Workshop on QA methods & procedures for BY staff)

The developed version of this document was initially elaborated by QA Team in collaboration with BY Partners and sent to all BY Partners by 4th December 2020. All partners read it and sent their comments and helped to develop it.

The BY Partners presented a report during internal dissemination seminars (more in D.7.2 "Preparing & holding Internal dissemination seminars").

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Proposition of course evaluation by students (Appendix 1)

Dimensions and items of the questionnaire – course evaluation by students	Codes
EFFECTS OF TEACHING – KNOWLEDGE	EF

I know the methods and tools of the subject.	EF1
I have knowledge on techniques adequate to the subject.	EF2
I understand the fundamental problems of the subject.	EF3
I understand the basic definitions of the subject.	EF4
I have the feeling that I am able to compare and find significant associations in the field and I am able to formulate solutions using the methods of the subject.	EF5
I have the feeling that I am able to argue and evaluate the given problems and solutions of the topic self-evidently.	EF6
I am able to choose the methods adequate to the types of problems in this field.	EF7
SKILLS	SKILLS
I am able to use basic theoretical knowledge and practical skills in the subject.	Skill1
I can understand and analyze phenomena and processes on the basis of the methods of the course.	Skill2
I am able to use the knowledge and skill gained during to analyze proposed solutions of concrete problems and propose new solutions using methodology, techniques and tools of the course.	Skill3
I am able to introduce proposed solutions in similar projects.	Skill4
SOCIAL COMPETENCIES	SC

In my team the team members are able to properly formulate priorities that support the implementation and solving assumed tasks as a team.	SC1
In my team the team members elaborate in the group the algorithm of solving special tasks.	SC2
In my team the team members are able to cooperate and work in the group taking different roles during preparation of common projects using methods, techniques and tools of the course.	SC3
In my team the team members are respectful to each other.	SC4
In my team the team members are helpful to each other.	SC5
I feel comfortable to share my time with my team members.	SC6
In my team I can openly talk about critical topics.	SC7
I also spend time with my team members in my free time.	SC8
In my team we openly speak about private topics.	SC9
After the project is over, I would like to have another project with my team.	SC10
EVALUATION OF THE COURSE	EC
Organization	
The course is well organized.	EC4
The course is well prepared.	EC5

The organization of the course in the classroom is optimal.	EC2
Teachers	
In this course the learning is easy.	EC1
In this course the knowledge is given in a clear, interactive and understandable way.	EC3
In this course the teachers are well prepared.	EC6
The way of teaching is clear.	EC7
The way of teaching is logical.	EC8
The way of teaching is well-structured.	EC9
Motivation and satisfaction	
Generally, I feel satisfied with this course.	EC10
I would recommend this course to other students.	EC11
I want to learn new things that are important for my future.	EC12
I am motivated to participate in this course.	EC13
I think the course is useful.	EC14
I have the feeling that in this course I am learning faster than in other courses.	EC15

I think the course prepared me for my later job.	EC16
Individual development	
I think the course enables me to understand the subjects more clearly.	EC17
I think the course delivers me a good overview about the issues of the fields of the topic.	EC18
I think the course enlarges my horizon.	EC19
I think the course improves my skills.	EC20
I think the course develops my knowledge.	EC21
I think the course improves my knowledge.	EC22
I think the course improves my social competencies.	EC23

Source: Own elaboration, adapted from (Maekioe-Marusik, Maekioe and Kowal, 2017)

Appendix 2. Proposition of course evaluation by teachers

Proposition used during the session of inter-alliance groups

Questions on the course design

A. Intended Learning Outcomes

1. How well do my content and methods work to ensure that students can achieve the learning outcomes?
2. What learning outcomes outside of course content do I have (i.e., writing skills, presentation skills)?
3. Are my outcomes theory-based and/or skill-based?
4. Are the learning outcomes specific, attainable, and measurable?

B. Contextual Issues

1. Who are my students (i.e., age range, walk of life, interests, occupation, experience)?
2. What are the students' needs?
3. What are their expectations of this course? Of the teacher?
4. What are my students' goals? How can I incorporate them into the course content?
5. How can I respect the diverse abilities and needs of my students (i.e., language or cultural differences, or students who learn in different ways)?
6. What teaching methods are most likely to engage my students?

C. Content Issues

1. What resources do I use and where do I find them (i.e., journals, libraries, student bibliographies, online searches, etc.)?
2. How much reading or other types of activities do I assign outside of class?

D. Assessment

1. What assessment tools do I use (i.e., assignments, exams, projects, collaborative work, peer assessment)? Why?
2. What am I trying to accomplish by using these tools?

3. What do I want the students to get out of them?
4. Are they consistent with my beliefs about student learning?
5. How do my assessments help students learn the difficult concepts in my course?
6. How can I limit the possibility of plagiarism and cheating?
7. When does assessment fit into my course?
8. Is the workload reasonable, well timed, and sustainable for my students and me?
9. What can I learn about my students' learning from the assessment results? How do I analyse and use these results?

E. Teaching Methods & Tools

1. What methods do my students feel comfortable with?
2. What other methods would you might consider using in this course?
3. What technical means (e.g. videos and audio materials, references to external e-resources, graphics, self-made films, photos, pictures, etc.) do I use in the course?
4. What methods help me to emphasise particularly important content and/or help students to understand particularly difficult content?

F. General Questions

1. What is there in the course that makes the course different from all other courses in the field?
2. What specifically peculiar things used in my course design could be used in the other 4 courses?
3. What can be done to improve the course?

Appendix 3. Sample syllabus review patterns

The MACICT syllabus review form

Reviewer:

Review of the syllabus

University:

.....

Name of the syllabus

.....

1. Is the course title and content in accordance with the teaching program?

a) Yes/ No/ Partially

b) If no, write a suggestion please:

.....

2. Does the syllabus have a specific year of study / semester / group?

a) Yes/ No/ Partially

b) If no, write a suggestion please:

.....

3. Does the course include Learning Objectives?

a) Yes/ No/ Partially

b) Write your comments, please.....

.....

3.1. Educational outcomes:

3.1.1. knowledge

a) Yes/ No/ Partially

b) If no, write a suggestion please:

.....

3.2. Practical skills Page 27 of 28

D5.1 Report on the EU practices in QA

a) Yes/ No/ Partially

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b) If no, write a suggestion please: www.macicit.eu

.....

3.3. Social skills

Beneficiary	Name of Reviewers	Role	Status
HSEL	Juho Mäkiö	Coordinator	Approved
HSEL	Evgeniia Surkova	LPM	cognizanced
UWR	Jolanta Kowal	LPM	Approved
ITU	Maria Paasivaara	LPM	
BSUIR	Alexandra Sidorovich	LPM	Approved
PSU	Rykhard Bogush	LPM	Approved
GSTU	Kanstantsin Kurachka	LPM	Approved
BrSTU	Svetlana Lebed	LPM	Approved
YKSUG	Lada Rudikova	LPM	Approved